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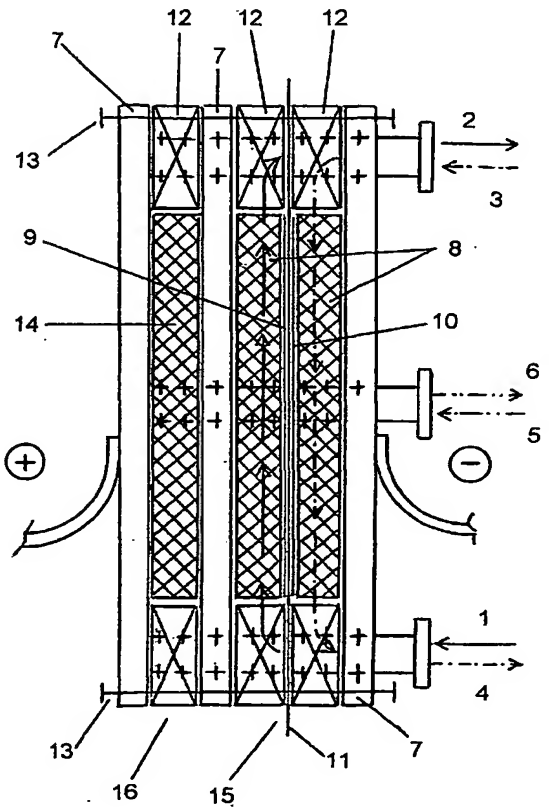
(54) Title: MEMBRANE FUELL CELL COUNTERCURRENT-FED WITH NON-HUMIDIFIED AIR



(57) Abstract: The present invention describes a membrane fuel cell capable of operating in a stable fashion at high currently density under dry reactant gas feed at near-atmospheric pressure. This result is obtained by employing internal porous gas distributors, such as three-dimensional reticulated materials, sintered materials, juxtaposed meshes or expanded sheets, and at the same time by countercurrent-feeding the gas reactants, preferably ambient air, from the bottom. In one preferred alternative liquid water is injected from the bottom into the air feed: with these operating conditions, an extremely simplified stable functioning is obtained, since the air and water flow-rates, adjusted as requested for the maximum nominal electrical output, are kept unvaried even at low or zero output conditions without the cell membrane undergoing dehydration.

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